Claims

What is claimed is:

1. A method for use in processing a video signal, the method comprising the steps of:

extracting histograms from a plurality of frames of the video signal;

for each of at least a subset of the extracted histograms, comparing the extracted histogram to a family histogram, and if the extracted histogram falls within a specified range of the family histogram, updating the family histogram to include the extracted histogram as a new member, and if the extracted histogram does not fall within the specified range of the family histogram, indicating the family histogram as being complete and utilizing the extracted histogram to generate a new family histogram for use in processing subsequent extracted histograms; and

utilizing one or more of the family histograms to detect a particular type of video content in the video signal.

2. The method of claim 1 wherein the particular type of video content comprises a commercial in a live or recorded broadcast program.

3. The method of claim 1 wherein the family histogram utilized in processing a first one of the extracted histograms (i) comprises an initial family histogram initialized to a predetermined configuration, or (ii) is itself designated as the initial family histogram.

4. The method of claim 1 wherein the family histogram is updated for a given one of the extracted histograms falling within the specified range of the family histogram by combining the family histogram with the given extracted histogram.

5. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises determining a duration of the family histogram.

6. The method of claim 5 wherein the family histogram is indicated as being likely to be associated with the particular type of video content if the family histogram has a duration falling within a specified range.

7. The method of claim 6 wherein the specified range is about 15 to 60 seconds for video content comprising a commercial in a live or recorded broadcast program.

8. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises determining a repetitiveness of the family histogram.

9. The method of claim 8 wherein the step of determining a repetitiveness of the family histogram further comprises determining if the family histogram is one of a series of consecutive family histograms each having a specified short duration.

10. The method of claim 8 wherein the step of determining a repetitiveness of the family histogram further comprises determining if the family histogram is a substantial repeat of a previous family histogram occurring within a designated period of time after the previous family histogram, wherein the repetitiveness either (i) does not occur in a first previous designated time period of about 3 to 5 minutes, or (ii) does occur in a second previous designated time period of about 15 minutes.

11. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises detecting a number of short family histograms of duration less than about 10 seconds each within a time period of about 3 to 5 minutes in length.

12. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises detecting a number of unique family histograms occurring within a specified time period.

13. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises detecting the absence of any family histogram having a duration greater than a specified amount of time.

14. The method of claim 13 wherein the specified amount of time is about 30 seconds.

15. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises comparing one or more family histograms of a specified duration to a superhistogram generated for a particular program.

16. The method of claim 15 wherein the superhistogram for the particular program is pre-computed and stored.

17. The method of claim 15 wherein the particular program and its associated superhistogram are identified using information obtained from an Electronic Program Guide (EPG).

18. The method of claim 1 wherein the step of utilizing one or more of the family histograms to detect a particular type of video content in the video signal further comprises detecting the absence of multiple previously-identified family histograms of at least a given duration within a designated period of time.

19. The method of claim 1 wherein a given family histogram is generated in accordance with a color entropy technique based on determination of one or more peaks in a color entropy variance within a sliding window of intra-coded frames of the video signal.

20. An apparatus for use in processing a video signal, the apparatus comprising:

a processor operative to process histograms extracted from a plurality of frames of the video signal, the processor being adapted, for each of at least a subset of the extracted histograms, to compare the extracted histogram to a family histogram, and if the extracted histogram falls within a specified range of the family histogram, to update the family histogram to include the extracted histogram as a new member, and if the extracted histogram does not fall within the specified range of the family histogram, to indicate the family histogram as being complete and to utilize the extracted histogram to generate a new family histogram for use in processing subsequent extracted histograms, one or more of the family histograms being utilizable to detect a particular type of video content in the video signal; and

a memory coupled to the processor for storing at least a portion of one or more of the extracted histograms and the family histograms.

21. An article of manufacture comprising a machine-readable medium containing one or more software programs for use in processing a video signal, wherein the one or more software programs when executed implement the steps of:

extracting histograms from a plurality of frames of the video signal;

for each of at least a subset of the extracted histograms, comparing the extracted histogram to a family histogram, and if the extracted histogram falls within a specified range of the family histogram, updating the family histogram to include the extracted histogram as a new member, and if the extracted histogram does not fall within the specified range of the

family histogram, indicating the family histogram as being complete and utilizing the extracted histogram to generate a new family histogram for use in processing subsequent extracted histograms; and

utilizing one or more of the family histograms to detect a particular type of video content in the video signal.